

Workshop „Topological Phenomena in Quantum Materials“
4-5 December 2018, IFW-Dresden, Room D2E.27
Scientific Program

Tuesday, 4th of December

9:00-10:40 I. Introduction and curvature (chair: Bernd Büchner)

Bernd Büchner: *Short UKRATOP overview*

Denys Makarov: *Exchange-driven chiral effects in curvilinear magnetism: theoretical abstraction or experimental observable*

Volodymyr Kravchuk: *Topological magnetic solitons as a connecting link between curvature and topology*

Kostiantyn Yershov: *Dynamics of magnetic domain walls in curvilinear wires*

11:10-13:10 II. Theory (chair: Manuel Richter)

Jeroen van den Brink: *The axion electromagnetic response of topological insulators*

Jorge I. Facio: *Looking at electronic phase transitions through Berry phase effects*

Ion Cosma Fulga: *Localization counteracts decoherence in noisy Floquet topological chains*

Sergei Sharapov: *Anomalous Hall and Nernst effects in Dirac materials*

14:30-16:30 III. Dirac and Weyl semimetals (chair: Sergey Borisenko)

Sai Aswartham: *Synthesis and physical properties of some Weyl & Dirac semimetals*

Alexander Yaresko: *Looking for signatures of Dirac dispersion in optical spectra*

Joseph Dufouleur: *Inter vs. intra-valley scattering in Weyl nodes and chiral anomaly in WTe_2*

Yurii Naidyuk: *Point-contact spectroscopic study of Weyl semimetals $MoTe_2$ and WTe_2*

16:50-18:40 IV. Superconductivity (chair: NN)

Alexander Kordyuk: *Fermi surface topology as a key to high-T_c superconductivity*

Christian Hess: *Nematic boson in an iron-based superconductor*

Tetiana Prikhna: *MgB_2 wires, bulks and thin films with high superconductive performance: manufacturing, structure, properties and application*

Martin von Zimmermann: *Charge order in cuprates and high-energy X-rays*

Wednesday, 5th of December

9:00-11:00 V. Experiment (chair: Alexander Kordyuk)

Fedir Sizov: *THz detectors in some applications*

Volodymyr Zabolotnyy: *Resonance X-ray reflectivity — a tool to extract valence profiles and atomic scattering factors*

Axel Lubk: *Surface Plasmons and Axion Electrodynamics on Topological Insulators*

Volodymyr Karbivskyy: *Scanning Tunneling Microscopy of Cu, Ag and Au Single Layers on Calcium hydroxapatite: Synthesis, properties and applications*

11:30-13:00 VI. Skyrmions (chair: Ion Cosma Fulga)

Manuel Richter: *Chemical Gating of a Weak Topological Insulator: $Bi_{14}Rh_3I_9$*

Dmytro Inosov: *Topological properties of spin-wave excitations in Cu_2OSeO_3*

Markus Garst: *Dynamics of topological spin textures in chiral magnets*

14:30-16:30 VII. Phase transitions, heterostructures and ARPES (chair: Denys Makarov)

Flavio Nogueira: *Conformal phase transition in topological insulators and superconductors*

Ulrich Rößler: *Textures in multisublattice magnetic crystals: recipes for glassy groundstates with little or zero quenched disorder?*

Oleg Janson: *DFT+DMFT for honeycomb lattices in (111) oxide heterostructures*

Sergey Borisenko: *ARPES of topological matter*

This workshop is organized within the framework of the project "Topological order of electrons in solids: New materials, Phenomena & application Concepts" – a Ukrainian-German Excellence Center (UKRATOP).

UKRATOP is funded by the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) under reference 01DK18002.

<https://ukratop.ifw-dresden.de/>